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Readiness for Inclusion: Analysis of Information Society Indicator with Educational Attainment of People with Disabilities in European Union Countries

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ABSTRACT

This research study aims to analyze the relation of technology based indicators (internet use, internet access, etc.) with educational attainment of people with disability in European Union countries. Statistics related with three different types of disabilities (seeing, hearing and walking) were used at this study. Educational attainment levels are: less than primary, primary and lower secondary education (levels 0-2), upper secondary and post-secondary non-tertiary education (levels 3 and 4), tertiary education (levels 5-8). Information society indicators which are digital inclusion (digital inc), E-government activities of individuals via websites (int act), households level of internet access (int acc), individuals - mobile internet access (mob acc), Internet use for interaction with public authorities (public services) were considered in this study. In addition to this, educational attainments were analyzed comparing with countries and a variety of disabilities. Data includes values of Disability Statistics and Information Society Indicators for 2019 at Eurostat Databases. Descriptive analysis was conducted. It was concluded that walking and digital participation had the highest correlation value. It has been revealed that the hearing variable has a negative and moderately significant relationship with the information society indicators. On the other hand, it was determined that there was a high level of correlation between the hearing variable and internet access.

KEYWORDS

Digital inclusion; Information society; Educational attainment; European union

1. Introduction

Digital inclusion (digital inc), E-government activities of individuals via websites (int act), households level of internet access (int acc) , individuals - mobile internet access (mob acc) , internet use for interaction with public authorities (public services) become indicators for information society. Information society needs to cover inclusion for shaping the future of education based on sustainable development goals (Uleanya, 2023). It is suggested to reconceptualize inclusive education by pointing

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out the distance education as covering issues revolving around disabilities in the context of technology, such as learners' lack of access to needed technological gadgets and technology such as computers, internet connectivity, technological skills and so forth and policies of inclusivity in education should be solved by covering technologically challenged persons (Tomczyk et al., 2022; Chadwick et al., 2022). It is seen that there is an intensified need to evaluate readiness for inclusion through the analysis of information society indicators. Digital social work becomes innovative and necessary dimension to foster inclusion for the welfare of societies (Servos, 2023).

Analyzing European countries' disability types on the educational attainment and also information society indicators in relation to educational attainments is highly important to shed a light on the readiness inclusion for the quality of education. Digital education and action plans for acquiring strategies to the quality of education need a basic analysis and this research enlightens future directions of educational policies especially people with disabilities. This research study opens a transparent door to see current situation of Europe.

In our rapidly evolving information-driven society, the crucial role of technology in education cannot be overstated (Oriji & Uzoagu, 2019). The advent of the digital age has fundamentally transformed how we access and share knowledge, democratizing education for individuals from an extensive range of backgrounds. (Kellner, 2004). However, within this era of digital transformation, it is incumbent upon us to ensure that no one is left on the sidelines. This research study represents a vital initiative aimed at bridging the digital divide and championing inclusive education, particularly for individuals with disabilities residing in European Union countries. As we collectively strive towards the attainment of sustainable development goals, inclusive education and digital inclusivity stand as indispensable cornerstones. Through a comprehensive examination of the intricate relationship between technology-driven indicators, educational achievements, and diverse disability types, this study yields invaluable insights into the preparedness of educational systems to embrace inclusivity within the digital age (Karten, 2015; Bhuiyan & Mollik, 2023). It casts a spotlight on the challenges confronted by individuals facing technological barriers and emphasizes the necessity of implementing policies and strategies that facilitate their seamless integration into the digitalized landscape of education.

Furthermore, this research delves into the intricate web of connections linking various types of disabilities, educational accomplishments, and indicators of the information society. It unearths crucial trends and correlations that warrant attention. By accentuating the substantial correlation between mobility impairments and active digital engagement, the study underscores the critical importance of ensuring that digital learning resources and platforms are accessible to individuals with limited mobility. Conversely, the observed negative correlation between hearing impairments and information society indicators underscores the urgency of addressing accessibility issues for the hearing-impaired community (Amponsah & Bekele, 2022). This research transcends the realm of academia and serves as a vital stride towards well-informed policymaking. It lays the foundation for tailor-made digital education and action plans designed to meet the unique needs of individuals with disabilities. Ultimately, this contributes to the enhancement of educational quality across European Union nations. In an era where our society's dependence on technology is continually deepening, this study offers a transparent glimpse into the current educational landscape, guiding us towards a future that is more inclusive and digitally empowered for all.

The research questions are:

RQ1. What are types of disability related to educational attainment?

RQ2. What is the analysis of Information Society Indicators in European Union countries for educational attainments?

2. Background

2.1 Inclusive education

Contemporary education approach requires individuals to be able to benefit from equal education opportunities under fair conditions, rather than separating them from society and education due to their differences, and considers this as social wealth. Individuals who have different characteristics and share the same environment and conditions can receive education systematically by integrating with the society without being excluded, only through inclusive education practices. To use limited resources effectively and efficiently in order to realize the objectives of inclusive education at the planned level and monitor the work done, it is important to monitor and improve. In order to realize all these, an effective education management is needed. For this reason, it is important to manage inclusive education effectively in order to achieve success (Bayram, 2019).

The fact that disadvantaged and students from different backgrounds receive education in an inclusive education environment enables them to study together with ordinary students, motivates them more to learn and thus increases their success at school. Therefore, inclusive education has become a necessity for social and personal benefit. On social grounds, it is accepted that with inclusive education, all students receive education in the same environment and under equal conditions. Positive attitudes such as respect, empathy and communication are developed in students, and they tend towards differences. At the same time, social inclusion is ensured by preventing social separation and exclusion. It is believed that by providing social integration with inclusive education, perceptions of diversity and coexistence are seen as rich (Akbarovna, 2022).

In the world, different meanings are attributed to inclusive education in different countries, and even within the same country, this concept can be understood differently in different regions (Ira & Gur, 2018; Stubbs, 2008). Therefore, the concept of inclusive education is often confused with special education, inclusive education and special lower class practices. However, while all these approaches are still practiced and encouraged, the differences are rarely understood. When people talk about one approach, another approach can actually be applied (Krasniqi et al., 2022).

It is argued that special methods, special education teachers, a special environment and equipment are necessary for the education of children in need of special education. However, in reality, all these are not more effective and beneficial than child-centered approaches. Instead of looking for the source of the problem in the system or the teacher, it sees the child as a problem. The child is defined entirely through the disability status they have and is differentiated in this context. Instead of respecting the child's strengths and special qualities, it is tried to "normalize" the child (Sudakova, 2018). Inclusive education is mostly used for the process of placing students with disabilities in regular schools. In this approach, the focus is still on the child rather than the system (Kielblock & Woodcock, 2023).

2.2 Information society

The social structure has been in a constant transformation throughout history. As mentioned before, these stages are named with names such as "primitive society, agricultural society, industrial society". It is impossible to clearly draw the boundaries and transition points between these social structures, but some events have been accepted as turning points. As in every field, the understanding of education in the information society has changed deeply. The dizzying advances in information technology mentioned in the previous section have made learning possible for everyone. Education or quality education has now become a concept that everyone can obtain, not just a certain group (Sharma et al., 2022). Developing technology has shaken the throne of formal education and has led to the emergence of concepts such as "distance education" or "online education".

When talking about educational material 50 years ago, the first thing that most people think of is books. But today, tools such as books and notebooks have lost their leading position. It has become imperative to develop new methods in education and to keep up with the developing technology. High-

tech products such as projectors, smart boards, computers, tablets or smartphones have now become ordinary educational materials. The book alone is shallow for the generation born in the digital age. Making smartphone applications of the books that are on the market today, or making websites supporting the book, publishing the videos, visuals and sound recordings related to the subjects mentioned in the book, etc. are not arbitrary practices, but concrete indicators of the inadequacy of the book for the new generation. Many institutions have attempted to design educational-instructional online games and train young people in this way. The classical education method is abandoned and methods that keep up with the digital age are adopted (Garnham, 2004).

Cybercrime is the first thing that comes to mind when it comes to the problem of information society. Developing information technologies have not only made our lives easier, but also brought new risks. These technologies are open to malicious use as well as being used in good faith. Today, the virtual world is mainly used for fraud, theft, data stealing, blackmail, espionage, etc. It is a place where crimes like cyber-crimes have also been an important part of the agenda. For this reason, the concepts of cyber security and information security occupy an important place on the agenda of countries. Cyber security is defined as "the security of our life in the cyber world, that is, the control of its privacy, integrity and accessibility". Information security, on the other hand, is defined as the process of ensuring the integrity of the information and transmitting it securely from the sender to the receiver in an environment where continuous accessibility is ensured, without being corrupted, altered, or captured by others (Goni et al., 2022).

2.3 Digital inclusion

New media technologies are playing an increasingly important role in the daily lives of citizens. Access to and use of information technologies has become vital to fully participate in a digitally-enabled society in which citizens' lives are increasingly mediated by information and communication technologies. Accessibility is the first step to digitally involve citizens and bridge the digital divide. However, this does not automatically guarantee benefits. Indeed, it is necessary to achieve an adequate level of digital literacy in order to fully appreciate the opportunities and advantages offered by information technologies and especially the Internet (Sieck et al., 2021).

Some of the most influential human cultural, economic and social activities now take place in the digital realm. This means exclusion or limited access from the digital realm is an important source of inequality in society and can increase socioeconomic disparities. Therefore, there are both opportunities and risks associated with the digital transformation of society. Technology is not a panacea for the socioeconomic challenges facing societies, and if digital inclusion is not considered and addressed, it can actually exacerbate these problems. The academic debate about digital inclusion started around the same time as the debate about the digital divide, but it has only recently gained renewed interest.

Ragnedda and Mutsvairo (2018) state that academics and policy makers interested in the digital divide and the digital inclusion process have gradually moved away from looking at the digital divide in terms of simple binary classifications of access to information technologies. Instead, three levels of discourse on the digital divide are now recognized. The first level primarily took into account the inequality in access to information technologies. As studies began to indicate that the benefits of accessing information technology are not widely shared by all users, they addressed inequality in second-level information technology use. Examining the various digital divides, it became clear that personal, political, social and economic backgrounds affect both access and use of information technologies. The third level, which is digital participation, examines the social benefits and tangible results that different users can derive from the access and use of information technologies. This third level can be defined as "the interaction between offline socially advantageous positions and digital inequalities in relation to the socially valuable resources we expect to gain from the Internet". This view of digital inclusion recognizes that social and digital inequalities are strongly intertwined and affect each other, and that the level of digital inclusion is influenced by socioeconomic and cultural variables.

3. Methodology

Secondary data analyses method is used in study. Secondary analysis is a research method that involves analyzing data collected by someone or some institutions. The sample of this study is the European Union countries and Turkey in 2019. And various information society indicator data are generated with data from the Eurostat database. Detailed information about the data set will be given in the following parts of the study. Datasets of seeing, walking and hearing disability groups were created for 0-2, 3-4, 5-8 and all education levels. A total of 12 data sets were obtained. There are 5 independent and 1 dependent variable in each data set. In addition, all the variables that make up the data set are of continuous data type. Independent variables were determined in line with expert opinion. Finland and the United Kingdom were excluded from the data sets because they contain missing values. Therefore, a total of 30 data are available in each data set. Then, descriptive statistics of the data sets were extracted and normality tests were performed. Shapiro-Wilk test was used as a normality test because the data set was below 50 observations (Razali & Wah, 2011). Pearson correlation method was applied to the data showing normal distribution and Spearman correlation method was applied to the data not showing normal distribution. The relationship levels between the variables were interpreted according to Table 1 (Tavşancıl, 2022).

Table 1 Correlation coefficients and relationship levels

Correlation Coefficient	Relationship
∓ 0.01 - ∓ 0.29	low level of relationship
∓0.30 - ∓0.70	moderate relationship
∓0.71 - ∓0.99	high level of relationship

4. Findings

4.1 Types of disability related to educational attainment (RQ1)

When the findings were examined, it was determined that Belgium (94.5) had the highest percentage of visual impairment, and Croatia (63.6) had the lowest percentage according to education level. When examined in terms of walking disability, it was determined that Norway (93.7) and Croatia (63.7) had the lowest. Finally, in terms of hearing impairment, it was determined that Cyprus (90.9) had the highest rate and Denmark (50.5) the lowest.

Table 2 Percentage of disability types according to educational attainment level

Countries	Seeing				Walking				Hearing			
	Education Levels											
	L0-2	L3-4	L5-8	Total	L0-2	L3-4	L5-8	Total	L0-2	L3-4	L5-8	Total
Austria	79.4	87.3	88.0	86.0	70.4	89.8	94.8	87.5	65.6	76.1	79.2	75.0
Belgium	92.4	94.7	96.2	94.5	74.1	86.9	92.1	85.1	71.6	78.0	77.8	76.1
Bulgaria	71.7	83.7	86.0	81.3	64.8	78.2	84.7	76.5	71.0	84.3	87.4	81.8
Croatia	50.9	65.9	72.7	63.6	36.5	69.1	81.4	63.7	62.0	80.3	83.5	76.3
Cyprus	82.3	93.5	94.7	91.2	69.3	90.6	95.8	87.2	81.8	92.1	95.9	90.9
Czechia	76.9	80.3	83.5	80.5	71.9	81.7	91.4	82.2	79.5	83.4	89.2	84.0
Denmark	73.7	76.0	79.1	76.8	73.5	83.5	91.4	85.0	45.8	49.5	52.5	50.5
Estonia	78.4	82.3	84.8	82.4	73.0	79.9	86.0	80.8	64.4	71.4	71.0	69.9
France	78.6	83.6	82.7	80.7	80.7	93.8	95.2	87.5	66.7	75.2	74.4	70.6
Germany	79.7	79.4	82.0	80.1	73.7	82.4	90.2	82.5	67.2	67.6	69.2	67.9
Greece	77.8	92.0	93.5	87.7	61.3	89.7	92.2	80.9	71.1	91.3	92.0	84.7
Hungary	77.9	85.0	84.2	83.4	62.7	81.3	89.9	79.9	78.5	84.3	80.3	82.1
Iceland	88.4	88.7	89.8	89.0	73.0	83.6	91.3	82.7	57.7	63.7	69.4	63.7
Ireland	86.9	93.3	93.9	91.9	75.2	91.1	95.1	88.6	74.2	83.6	86.5	82.4
Italy	75.8	85.5	86.6	81.1	75.3	93.4	94.9	85.1	71.7	84.4	83.5	78.2
Latvia	67.3	76.0	79.4	75.4	70.3	80.1	89.9	81.2	73.1	85.5	84.8	83.1

Table 2 Percentage of disability types according to educational attainment level(Continued)

Countries	Seeing				Walking				Hearing			
	Education Levels											
	L0-2	L3-4	L5-8	Total	L0-2	L3-4	L5-8	Total	L0-2	L3-4	L5-8	Total
Lithuania	66.7	74.8	82.8	76.6	64.6	77.2	89.6	80.1	66.3	76.7	83.3	77.7
Luxembourg	62.0	69.0	70.2	67.8	76.4	88.3	94.1	88.0	55.6	56.4	62.1	59.0
Malta	86.2	91.7	92.0	88.8	78.8	94.4	96.6	86.3	72.6	84.0	85.1	78.0
Netherlands	81.6	87.4	89.9	86.1	70.7	84.3	89.3	81.5	68.6	76.5	77.8	74.5
Norway	87.2	91.2	90.8	90.0	89.1	93.2	97.4	93.7	73.0	70.5	75.4	73.8
Poland	70.5	80.6	84.4	79.8	66.3	85.0	93.7	84.1	77.8	89.0	92.9	88.1
Portugal	70.4	88.7	89.2	78.3	76.1	96.7	96.3	84.8	72.6	86.2	84.0	78.0
Romania	65.5	81.4	87.6	77.5	58.7	80.3	89.6	75.1	61.7	79.8	86.6	75.3
Serbia	64.3	84.7	87.8	80.3	60.4	85.3	89.3	79.9	68.8	87.1	90.5	83.2
Slovakia	72.5	83.4	86.3	82.7	62.4	81.2	90.8	81.0	72.0	87.4	92.4	86.6
Slovenia	67.1	71.6	76.0	73.3	67.3	77.3	90.9	83.4	62.3	66.0	74.1	70.2
Spain	83.5	92.4	92.5	88.1	78.0	92.6	94.8	86.1	79.6	90.9	90.8	85.3
Sweden	74.9	79.7	83.9	80.2	71.5	84.8	91.6	84.2	60.9	61.6	66.4	63.7
Turkey	63.9	78.7	82.4	71.7	64.3	88.1	93.2	76.7	76.5	89.3	91.7	83.1

4.2 The analysis of information society indicators in European Union countries for educational attainments (RQ2)

Table 3 Percentage of information society indicators in European Union countries

Country	Digital inc	Int_ use	Int_acc	Mob_ int_acc	Public services
Austria	86.2	69.7	89.9	47.3	69.7
Belgium	88.9	58.6	89.7	56.6	58.6
Bulgaria	66.8	25.4	75.1	25.2	25.4
Croatia	77.1	33.0	80.5	21.9	33.0
Cyprus	85.5	50.3	89.6	28.6	50.3
Czechia	84.7	53.8	87.0	30.9	53.8
Denmark	95.5	91.7	95.4	57.5	91.7
Estonia	88.4	80.0	90.4	33.0	80.0
France	86.5	74.7	90.2	48.3	74.7
Germany	91.2	59.1	94.8	52.5	59.1
Greece	73.7	52.1	78.5	24.7	52.1
Hungary	79.9	52.8	86.2	46.6	52.8
Iceland	98.4	89.2	97.7	50.0	89.2
Ireland	88.3	61.1	90.6	43.9	61.1
Italy	73.9	23.4	85.2	14.2	23.4
Latvia	83.7	69.6	85.5	16.0	69.6
Lithuania	80.7	54.7	81.5	28.3	54.7
Luxembourg	92.6	60.1	95.2	41.9	60.1
Malta	85.1	50.0	86.1	48.3	50.0
Netherlands	95.4	81.2	98.4	48.8	81.2
Norway	97.7	86.7	98.4	57.8	86.7
Poland	78.3	40.5	86.8	33.6	40.5
Portugal	72.9	41.0	80.9	34.0	41.0
Romania	71.6	11.7	83.6	32.1	11.7
Serbia	75.9	29.4	80.1	8.72	29.4
Slovakia	82.0	59.0	82.2	39.6	59.0
Slovenia	81.0	53.0	89.0	22.5	53.0
Spain	87.7	57.6	91.4	36.7	57.6
Sweden	95.4	86.0	96.1	49.3	86.0
Turkey	72.7	51.2	88.3	19.5	51.2

When the percentage of information society indicators in European Union countries are examined, Iceland (98.4) has the highest in terms of digital inclusion, Norway (86.7) in internet use, Iceland (97.7) in internet access, Norway (57.8) in mobile internet access, and Denmark (91.7) in public service determined.

Table 4 Descriptive statistics according to educational attainment level

Educational Attainment Level		Mean	Median	SD	Minimum	Maximum	Shapiro-Wilk	
							W	p
Independent variables	Digital inc	83.9	84.9	8.51	66.8	98.4	0.972	0.604
	Int_ use	56.9	56.2	20.3	11.6	91.7	0.966	0.447
	Int_acc	88.1	88.6	6.19	75.0	98.4	0.972	0.603
	Mob_ int_acc	36.6	35.3	13.7	8.72	57.8	0.961	0.326
	Public services	56.9	56.2	20.3	11.6	91.7	0.966	0.447
L 0-2	Seeing	75.1	76.3	9.25	50.9	92.4	0.981	0.844
	Walking	69.7	71.1	9.21	36.5	89.1	0.894	0.006
	Hearing	69	71	7.95	45.8	81.8	0.955	0.225
L 3-4	Seeing	83.4	83.7	7.47	65.9	94.7	0.964	0.399
	Walking	85.5	84.9	6.36	69.1	96.7	0.972	0.605
	Hearing	78.4	81.8	10.8	49.5	92.1	0.915	0.020
L 5-8	Seeing	85.8	86.2	6.25	70.2	96.2	0.967	0.472
	Walking	91.8	91.5	3.61	81.4	97.4	0.938	0.079
	Hearing	81	83.5	10.2	52.5	95.9	0.941	0.098
Total	Seeing	81.6	80.9	7.13	63.6	94.5	0.974	0.653
	Walking	82.7	83.1	5.35	63.7	93.7	0.898	0.008
	Hearing	76.5	77.8	9.09	50.5	90.9	0.941	0.098

When Table 4 is examined, the mean of digital inclusion (Digital inc) variable is 83.9 and its standard deviation is 8.51. The minimum value of this variable was recorded as 66.84, while the maximum value was recorded as 98.4. The variable E-government activities of individuals via websites (Int_use) with a mean of 56.9 and a standard deviation of 20.34 takes values between a minimum of 11.65 and a maximum of 91.7. The Households level of internet access (Int_acc) variable has a mean value of 88.1 and a standard deviation of 6.19. The value of this variable ranges from a minimum of 75.0 to a maximum of 98.4. The mean of the mobile internet access (Mob_int_acc) variable is 36.6 and the standard deviation is 13.78. The minimum value for the mobile internet access variable is 8.72 and the maximum value is 57.8. The Internet use for interaction with public authorities (Public services) variable has a mean of 56.9 and a standard deviation of 20.3. The minimum value of the Internet use for interaction with public authorities variable was calculated as 11.6 and the maximum value as 91.7. In addition, all independent variables exhibit normal distribution.

For 0-2 education level, the mean of the Seeing variable is 75.1 and the standard deviation is 9.25. The minimum value for this variable was calculated as 50.9 and the maximum value as 92.4. The Walking variable has a mean value of 69.7 and a standard deviation of 9.21. The minimum value recorded for the walking variable is 36.5 and the maximum value is 89.1. Hearing variable, whose mean is 69 standard deviation 7.95, takes values between a minimum of 45.8 and a maximum of 81.8. At 0-2 education level, Seeing (W= 0.981, p-value> . 05) and Hearing (W= 0.955, p-value> . 05) variables showed normal distribution, while Walking variable (W=0.894, p-value=0.006) does not show a normal distribution.

At 3-4 education levels, the Seeing variable has a mean value of 83.4 and a standard deviation of 7.47. The minimum value calculated for the Seeing variable is 65.9 and the maximum value is 94.7. The mean of the walking variable is 85.5 and the standard deviation is 6.36. The minimum value for this variable was recorded as 69.1 and the maximum value as 96.7. The Hearing variable has a mean

value of 78.4 and a standard deviation of 10.87. The value of this variable ranges from a minimum of 49.5 to a maximum of 92.1. While Seeing (W= 0.964, p-value>.05) and Walking (W= 0.972, p-value >.05) variables showed normal distribution at 3-4 education levels, Hearing (W= 0.915, p-value=0.02)) does not show a normal distribution.

At 5-8 education levels, the Seeing variable with an average of 85.8 standard deviations of 6.25 takes values between a minimum of 70.2 and a maximum of 96.2. The mean of the walking variable is 91.8 and the standard deviation is 3.61. The minimum value for the walking variable was calculated as 81.4 and the maximum value as 97.4. The Hearing variable has a mean value of 81 and a standard deviation of 10.25. The minimum value determined for the Hearing variable is 52.5, and the maximum value is 95.9. At this education level, Seeing (W= 0.967, p-value>.05), Walking (W= 0.938, p-value >.05) and Hearing(W=0.941, p-value>.05) variables exhibit normal distribution.

At all education levels, the mean value for the Seeing variable was calculated as 81.6 and the standard deviation as 7.13. The minimum value of this variable is 63.9 and the maximum value is 94.5. The mean of the walking variable is 82.7 and its standard deviation is 5.35. Walking variable varies between a minimum of 63.7 and a maximum of 93.7. The Hearing variable has a mean value of 76.5 and a standard deviation of 9.09. The minimum value calculated for this variable is 50.5 and the maximum value is 90.9. In the whole education level, Seeing(W= 0.974, p-value>.05) and Hearing(W= 0.941, p-value>.05) variables show normal distribution, while Walking(W= 0.898, p-value=0.008) variables are normal and do not show distribution.

Table 5 Level 0-2 educational attainment level correlation matrix

		Digital inc	Int_ use	Int_acc	Mob_ int_acc	Public services
Seeing	Pearson's r	0.529 **	0.465 **	0.473 **	0.630 ***	0.465 **
	p-value	0.003	0.010	0.008	<.001	0.010
Walking	Spearman's rho	0.598 ***	0.447 *	0.590 ***	0.562 **	0.447 *
	p-value	<.001	0.013	<.001	0.001	0.013
Hearing	Pearson's r	-0.337	-0.320	-0.294	-0.260	-0.320
	p-value	0.068	0.085	0.115	0.165	0.085

Note: * p < .05, ** p < .01, *** p < .001

Looking at Table 5, it is seen that there are moderately significant relationships between the Seeing variable and the information society indicators. The relationship between Seeing and mob_int_acc has the highest correlation value (r=0.63, p<.001). As in the Seeing variable, it has been determined that there are moderately significant relationships between the Walking variable and the information society indicators. The highest correlation value of this variable belongs to the relationship between Walking and Digital inc (rho=0.598, p<.001). The Hearning variable, on the other hand, does not show a significant relationship with any information society indicator.

When Table 6 is examined, it has been determined that the Seeing and Walking variables do not show significant relationships with the information society indicators. The Hearing variable, on the

Table 6 Level 3-4 educational attainment level correlation matrix

		Digital inc	Int_ use	Int_acc	Mob_ int_acc	Public services
Seeing	Pearson's r	0.106	0.083	0.079	0.297	0.083
	p-value	0.576	0.663	0.677	0.111	0.663
Walking	Pearson's r	0.142	0.121	0.237	0.257	0.121
	p-value	0.455	0.523	0.207	0.171	0.523
Hearing	Spearman's rho	-0.659 ***	-0.636 ***	-0.619 ***	-0.572 ***	-0.636 ***
	p-value	<.001	<.001	<.001	<.001	<.001

Note: * p < .05, ** p < .01, *** p < .001

other hand, shows moderately significant relationships with information society indicators. The relationship between Hearing and Digital inc was the one with the highest correlation value (rho=0.598, p<.001).

Table 7 Level 5-8 educational attainment level correlation matrix

		Digital inc		Int_ use		Int_acc		Mob_ int_acc		Public services	
Seeing	Pearson's r	0.033		0.002		-0.007		0.211		0.002	
	p-value	0.863		0.991		0.969		0.262		0.991	
Walking	Pearson's r	0.245		0.193		0.346		0.314		0.193	
	p-value	0.191		0.307		0.061		0.091		0.307	
Hearing	Pearson's r	-0.653	***	-0.619	***	-0.643	***	-0.578	***	-0.619	***
	p-value	< .001		< .001		< .001		< .001		< .001	

* p < .05, ** p < .01, *** p < .001

According to Table 7, Seeing and Walking variables do not show significant relationships with information society indicators. The Hearing variable, on the other hand, has negative moderate significant relationships with the information society indicators. The highest correlation value of this variable belongs to the relationship between Hearing and Digital inc (r=-0.653, p<.001).

Table 8 Total (all levels) educational attainment level correlation matrix

		Digital inc		Int_ use		Int_acc		Mob_ int_acc		Public services	
Seeing	Pearson's r	0.319		0.264		0.231		0.440	*	0.264	
	p-value	0.085		0.159		0.219		0.015		0.159	
Walking	Spearman's rho	0.582	***	0.416	*	0.571	***	0.520	**	0.416	*
	p-value	< .001		0.022		< .001		0.003		0.022	
Hearing	Pearson's r	-0.572	***	-0.524	**	-0.581	***	-0.509	**	-0.524	**
	p-value	< .001		0.003		< .001		0.004		0.003	

Note: * p < .05, ** p < .01, *** p < .001

Table 8 shows that the Seeing variable only has a moderately significant relationship with the Mob_int_acc variable (r=-0.440, p< .05). It is seen that there is a moderately significant relationship between the walking variable and the information society indicators. The correlation between Walking and Digital inc showed the highest correlation value (rho=0.582, p<.001). The Hearing variable, on the other hand, has negative moderate significant relationships with information society indicators. The relationship between Hearing variable and Int_acc has the highest correlation value (r=-0.581, p<.001).

5. Discussion and conclusion

Analyzing the disability types of European countries regarding educational attainments and the information society indicators according to educational attainments is of great importance in terms of shedding light on the readiness for the quality of education. Action plans for digital education and acquiring strategies for the quality of education need a fundamental analysis, and this research sheds light on the future directions of education policies, especially for people with disabilities. This research study examines the types of barriers related to education level to see the current situation of Europe and how the information society indicators are analyzed in European Union countries for educational attainments. Many studies in the literature emphasize that educational gains are important in terms of the trained workforce and the right to equal education (Song et al., 2022; Alhumaid & Said, 2023; Gomda et al, 2022).

At the 0-2 education level, it was observed that the "walking" variable exhibited a normal distribution. However, for individuals with 3-4 years of education, both "hearing" and "walking" variables did not display a normal distribution pattern. Furthermore, there exists a moderately significant correlation between the "vision" variable and the indicators associated with the information

society. The difference in educational backgrounds between the 0-2 education level and the 3-4 education level may lead to variations in how individuals perceive and report their abilities, resulting in non-normal distribution patterns for "hearing" and "walking" variables in the latter group. Additionally, the moderately significant correlation between the "seeing" variable and information society indicators suggests that individuals with different levels of vision may have varying degrees of access or participation in information society-related activities.

The relationship between vision and mobile internet access has the highest correlation value. As in the visual variable, it was determined that there were moderately significant relationships between the walking variable and the information society indicators. The highest correlation value of this variable belongs to the relationship between gait and digital inclusion. The analysis revealed that both the "vision" and "walking" variables did not exhibit significant associations with information society indicators, whereas the "hearing" variable demonstrated moderately significant correlations with these indicators. This discrepancy could be due to the specific nature of the information society activities, where hearing abilities might play a more substantial role in participation compared to vision or physical mobility.

The relationship between hearing and digital inclusion was determined as the relationship with the highest correlation value.

Seeing and walking variables do not show significant relationships with information society indicators. Hearing variable, on the other hand, has negative and moderately significant relationships with information society indicators. The highest correlation value of this variable belongs to the relationship between gearing and digital inclusion.

The variable of vision has only a moderately significant relationship with the variable of accessing the mobile internet. It is seen that there is a moderately significant relationship between the walking variable and the information society indicators. The correlation between walking and digital inclusion showed the highest correlation value. Hearing variable, on the other hand, has negative and moderately significant relationships with information society indicators. The relationship between the hearing variable and internet access has the highest correlation value.

As the implications of the study rely on these intricate relationships between disability types, information society indicators, and educational attainment, it becomes evident that a holistic approach to inclusive education and digital inclusion is imperative for ensuring equal opportunities for individuals with disabilities. In the context of European Union countries, this research emphasizes the significance of tailored interventions and measures to address the distinct challenges encountered by individuals with visual, mobility, and hearing impairments within the digitalized educational landscape.

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Conflict of interest

The authors declare that they have no conflict of interest.

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